



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street, WTR-6  
San Francisco, CA 94105

1 July 2014

Mr. Anthony T. Nguyen  
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PO Box 931  
Imperial, CA 92251

Dear Mr. Nguyen:

Thank you for your letter of 24 June, 2014, asking additional questions about possible health effects from your drinking water when you at the Kern Valley State Prison in Delano. You had some specific questions about whether you can get exposed to arsenic through your skin, by rinsing your mouth, or by inhalation of mists while showering. You also wanted to know about long-term poisoning by low levels of arsenic.

It's certainly possible for arsenic to enter the body from inhaling water vapor that contains it. However, the dose would be small. You might inhale a few milliliters of water during a shower. If the levels were what KVSP had, 0.012-0.023 milligrams per liter, the exposure could be something like 0.00002 to 0.0001 milligrams. These levels are well below what we believe would be harmful.

As far as I know, arsenic in water won't breach the gum line through rinsing your mouth with water containing it. If it passes across skin at all, it does so very slowly, so that the amount of arsenic absorbed would be much less than the amount inhaled from the vapors, perhaps 1/100<sup>th</sup> of that amount. Again, these levels are well below harmfulness.

Hyperpigmentation and keratosis can occur from exposures to elevated levels of arsenic, such as 0.1-1.0 milligrams per day. These can look like dark spots on your skin, or thickening and roughness, and may include something like warts or skin growths. These tend to be seen in armpits, bottoms of feet and palms, so perhaps your warts are from this cause. But I doubt it, because the KVSP water was much lower in arsenic. Again, you can ask a physician about your condition.

I mentioned in the last letter that arsenic can be lethal at about 100-200 milligrams. Arsenic doesn't have much of a taste.

If you have more questions, you can reach me at the above address, or at 415 972-3569.

Sincerely,

Bruce A. Macler, PhD  
Regional Toxicologist  
Drinking Water Program